



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Barsness, et al.

Serial No.: 09/801,309

Filed: March 7, 2001

For: SUBJECT/OBSERVER UPDATE CONTROL METHOD
AND APPARATUS

Group Art Unit: 2145

Confirmation No.: 2651

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF IN SUPPORT OF APPEAL
FROM THE PRIMARY EXAMINER TO THE BOARD OF APPEALS

Sir:

Applicant(s) herewith submit an appeal brief in support of the appeal to the Board of Appeals from the decision dated June 3, 2005, of the Primary Examiner finally rejecting claims 1-23.

The appeal brief fee of \$500.00 is:

- ☐ Enclosed.
- ☐ Not required. (Fee paid in prior appeal.)
- ☒ Charged to Deposit Account No. 09-0465. A duplicate copy of this sheet is enclosed.

Docket No.: ROC920010075US1
Serial No.: 09/801,309

1. Real Party in Interest

The real party in interest is International Business Machines, Inc., the assignee of the above-identified application.

2. Related Appeals and Interferences

There are no related appeals or interferences for the above-identified application.

3. Status of Claims

Claims 1-23 are pending. The Examiner issued a final rejection of claims 1-23 on June 3, 2005. Applicant appeals the final rejection of claims 1-23.

4. Status of Amendments

Applicant amended claims 1, 4, 8, 10, 13, 16-17, and 19 in its Response mailed December 27, 2004. The Examiner entered these amendments in the Office Action mailed June 3, 2005.

5. Summary of Claimed Subject matter

In conventional subject-observer systems, each subject maintained a list of observers and, when the subject's state changed, notified each observer of its state change. This notification occurred regardless of the observer's particular interest or the observer's capacity to handle the update. The observers would then request the updated information, again regardless of the observer's particular interest or the observer's capacity to handle the update. The subject's updates are then issued, only to be discarded by that observer. This drawback made conventional designs inflexible and inefficient, particularly in modern "distributed" systems because the remote messages are comparatively slow. That is, when objects reside on different computer systems, the distributed system manager must send messages between those systems. These *inter*-system messages are sent at a much slower rate than *intra*-system messages. This drawback can make it computationally expensive to maintain data consistency across the distributed system.

Another drawback with conventional subject/observer systems is that the subject object controls the message transmission rate. Frequently, an observer object running on a heavily burdened system may not be able handle updates from the subject object at this rate. This drawback can cause a bottleneck at one processor that can cascade to other processors and cause them to become backed-up as well.

Yet another drawback of conventional design is that each subject frequently needs to simultaneously maintain several different types of relationships, and therefore to exchange different data for each type of relationship. In an effort to support these different relationships, conventional methods forced the subject object to support multiple attach/detach interfaces and to maintain multiple observer lists. This approach, however, was not extendable and frequently caused "code bloat."

The present invention overcomes these drawbacks by introducing ***observer defined and controlled*** aspects into a subject/observer implementation. In operation, each observer in some embodiments creates one or more aspects and attaches the aspects to the subject using a predefined set of attach/detach methods. These aspects include

information about what specific type of information the observer wants, what form the information should be sent, and how frequently the information should be sent. When the subject changes its state, it produces an update message and sends the message to the attached aspects. If the update is the type that the observer is interested, the aspect sends a message to the subject instructing it to send updated information to the observer.

In some cases, this message may also instruct the subject to send the message to the accumulator until the observer is ready to receive the update and/or to send the update to the preprocessor for additional processing. This update method allows the observer to throttle and/or narrow its scope of attachment to the subject. In this way, the present invention provides an easily extendible mechanism that allows each individual observer to dynamically control what updates it wishes to be notified of from the subject, and how often it wishes to be notified of these updates by the subject.

Claim 1 is directed at a data processing system comprising a subject, an observer associated with the subject and adapted to generate configuration information, and a transmission manager associated with the subject. The transmission manager may be adapted to receive the configuration information from the observer and to selectively communicate update information to the observer based on the configuration information. The configuration information comprises an aspect of the observer.

Claim 4 further requires that the attribute of the observer include a communication speed indication.

Claim 5 further requires that the transmission manager accumulate the update information in response to the communication speed indication.

Claim 10 is directed at a distributed computer system comprising a subject code segment resident on a first computer node and an observer code segment resident on a second computer node, the first computer node being in operable communication with the second computer node. The subject code segment may be adapted to produce a status update message. This system may further comprise an aspect code segment coupled between the subject code segment and the observer code segment. The aspect code

segment may be configured to detect information associated with a message and to selectively communicate the message from the subject code segment to the observer code segment based at least in part upon an attribute of the observer and the detected information.

Claim 13 and claim 19 are directed at a method of communicating updates from a subject to an observer comprising sending configuration information from the observer to an aspect, the configuration information comprising an attribute of the observer; notifying the aspect of an update; interrogating the update to generate update information, and selectively communicating the update to the observer based on a comparison between the update information and the configuration information.

Claim 16 further requires sending updated configuration information from the observer to the aspect, wherein the updated configuration information comprises an updated attribute of the observer.

Claim 17 further requires that the updated attribute of the observer includes a system load indication.

Claim 22 further requires sending updated configuration information from the observer to the aspect.

Claim 23 is directed at a method of maintaining data consistency between a subject object on a first computer system and an observer object on a second computer system, comprising generating an aspect object, communicating configuration information from the observer object to the aspect object, the configuration information including a desired type indicator and a desired communication rate indicator; attaching the aspect object to the subject object; and in response to a state change indication from the subject: 1) sending an update to the aspect; 2) interrogating the update to generate an update type indicator; 3) modifying the update based on a comparison between the update type indicator and the desired type indicator to produce a modified update; 4) sending the modified update to an accumulator; 5) using the desired communication rate indicator to determine whether the object is ready to receive the modified update; and 6)

communicating the modified update to the observer.

Applicant believes the above satisfies the requirements of 37 C.F.R. §41.37 (c)
(v).

6. Grounds of rejection to be reviewed on appeal

The Examiner rejected claims 1-23 under 35 U.S.C. 102(e) as anticipated by U.S. Patent No. 6,721,740 to Skinner et al (“Skinner”). Applicant requests review of all rejections.

Applicant believes the above satisfies the requirements of 37 C.F.R. §41.37(c) (vi).

7. Argument

Applicant expressly states that the rejected claims do not stand or fall together.

A reference can only anticipate a claim if the reference describes each and every element as set forth. *M.P.E.P. § 2131.01*.

I. All Claims

The cited reference, Skinner, is directed at a method for components of an application to specify an interest in one or more data objects. *Skinner, col. 8, lines 13-16*. Unlike the present invention, however, the interest criteria in Skinner is limited to assembling conditions on the attributes of the *subject*. The present invention, in contrast, allows the observer to implement and register criteria based on the attributes of the *observer*. See *claims 1-9* (“an observer associated with the subject and adapted to generate configuration information, the configuration information comprising an attribute of the observer”); *claims 10-12* (“the aspect configured to detect information associated with the update message and to selectively communicate an update from the subject to the observer based at least in part upon an attribute of the observer and the detected information”); *claim 13-18* (“communicating configuration information from the observer to an aspect, the configuration information comprising an attribute of the observer”); *claim 19* (“communicating configuration information from the observer to an aspect, the configuration information comprising an attribute of the observer”); and *claim 23* (“communicating configuration information from the observer object to the aspect object, the configuration information including a desired type indicator and a desired communication rate indicator”). This feature of the present invention provides significant advantages. For example, the present invention allows the observer to specify a desired communication rate, which the subject can use to help determine whether the observer is ready to receive updates. As explained in the background section of the above-identified application, one drawback with conventional subject/observer systems is that the subject

object controls the message transmission rate. Frequently, an observer object running on a heavily burdened system may not be able handle updates from the subject object at this rate. This drawback can cause a bottleneck at one processor, which can cascade to other processors and cause them to become backed-up as well. *Background, pg. 3, lines 3-8.*

The Examiner appears to cite col. 8, lines 57-59 and col. 14, lines 32-38 as showing configuration information comprising an attribute of the observer. *Office Action mailed June 3, 2005 at section 9, 3rd bullet.* Applicant believes this is erroneous. More specifically, the language at col. 8, lines 57-59 merely states that an observer can register with a particular subject. The present invention, in contrast, allows the observers to specify an addition criteria. As explained in the background section:

In conventional subject-observer systems, each subject maintained a list of observers and, when the subject's state changed, notified each observer of its state change. This notification occurred regardless of the observer's particular interest or the observer's capacity to handle the update. The observers would then request the updated information, again regardless of the observer's particular interest or the observer's capacity to handle the update. The subject's updates are then issued, only to be discarded by that observer. This drawback made conventional designs inflexible and inefficient.

Background, pg. 2, lines 7-13. The language at column 14, lines 32-38 also fails to support the Examiner's position. This section merely states that the client-side may include subject and observer objects. Again, however, there is no suggestion that the observer can register configuration information comprising an attribute of the observer.

II. Claims 4-5 and 23

In addition to the elements identified in Section I, claims 4-5 further require that the object register "a communication speed indication," and claim 23 further requires the acts of "communicating configuration information from the observer object to the aspect object, the configuration information including . . . a desired communication rate indicator" and "using the desired communication rate indicator to determine whether the

object is ready to receive the modified update.” Applicant is unable to find any specific reference to these elements in the Office Action dated June 3, 2005 and respectfully submits that Skinner fail to teach or suggest these elements.

III. Claims 16-17 and 22

In addition to the elements identified in Section I, claim 16-17 further require “sending updated configuration information from the observer to the aspect, wherein the updated configuration information comprises an updated attribute of the observer. Claim 22 similarly requires that the object send “updated configuration information from the observer to the aspect.” Applicant is unable to find any specific reference to these elements in the Office Action dated June 3, 2005 and respectfully submits that Skinner fail to teach or suggest this element. wherein the method further comprises sending updated configuration information from the observer to the aspect.

IV. Claim 17

In addition to the elements identified in Section I, claim 17 further requires that the object register “a system load indication.” Applicant is unable to find any specific reference to these elements in the Office Action dated June 3, 2005 and respectfully submits that Skinner fail to teach or suggest this element.

Applicant believes the above satisfies the requirements of 37 C.F.R. §41.37(c) (vii).

8. Claims Appendix

1. A data processing apparatus, comprising:
a subject;
an observer associated with the subject and adapted to generate configuration information, the configuration information comprising an attribute of the observer; and
a transmission manager associated with the subject, the transmission manager adapted to receive the configuration information from the observer and to selectively communicate update information to the observer based on the configuration information.
2. The apparatus of claim 1, wherein the configuration information includes a desired type indication.
3. The apparatus of claim 2, wherein the transmission manager selectively discards the update information in response to the desired type indication.
4. The apparatus of claim 1, wherein the attribute of the observer includes a communication speed indication.
5. The apparatus of claim 4, wherein the transmission manager accumulates the update information in response to the communication speed indication.
6. The apparatus of claim 1, wherein the transmission manager is an aspect associated with the subject.
7. The apparatus of claim 1, wherein the subject generates the state change

indication and communicates the state change incitation to the transmission manager.

8. The apparatus of claim 1, wherein the transmission manager selectively modifies the update information in response to the configuration information.

9. The apparatus of claim 1, further comprising:

a first processor;

a first memory coupled to the first processor, wherein the subject and the transmission manager reside within the first memory;

a second processor; and

a second memory coupled to the second processor, wherein the observer resides within the second memory.

10. A distributed computer system, comprising:

a) a subject code segment resident on a first computer node, the subject code segment adapted to produce an update message;

b) an observer resident on a second computer node, the first computer node being in operable communication with the second computer node; and

c) an aspect coupled between the subject code segment and the observer, the aspect configured to detect information associated with the update message and to selectively communicate an update from the subject to the observer based at least in part upon an attribute of the observer and the detected information.

11. The distributed computer system of claim 10, wherein the subject comprises a network management software program, and wherein the observer code segment comprises a graphical user interface.

12. The distributed computer system of claim 10, wherein the subject, the observer,

and the aspect comprise objects.

13. A method of communicating updates from a subject to an observer, comprising:
communicating configuration information from the observer to an aspect, the
configuration information comprising an attribute of the observer;
notifying the aspect of an update;
interrogating the update to generate to generate update information; and
selectively communicating the update to the observer based on a comparison
between the update information and the configuration information.
14. The method of claim 13, further comprising selectively modifying the update
based on a comparison between the update information and the configuration
information.
15. The method of claim 13, further comprising accumulating the update information
based on a comparison between the update information and the configuration
information.
16. The method of claim 13, further comprising sending updated configuration
information from the observer to the aspect, wherein the updated configuration
information comprises an updated attribute of the observer.
17. The method of claim 16, wherein the updated attribute of the observer includes a
system load indication.
18. The method of claim 13, further comprising associating the aspect with the
subject.

19. A computer program product, comprising:
- (a) a program configured to perform a method of controlling updates between a subject and an observer, the method comprising:
 - 1) communicating configuration information from the observer to an aspect, the configuration information comprising an attribute of the observer;
 - 2) notifying the aspect of an update;
 - 3) interrogating the update to generate to generate update information; and
 - 4) selectively communicating the update to the observer based on a comparison between the update information and the configuration information.
 - (b) a signal bearing media bearing the program.
20. The computer program product of claim 19, wherein the method further comprises selectively modifying the update based on a comparison between the update information and the configuration information.
21. The computer program product of claim 19, wherein the method further comprises accumulating the update information based on a comparison between the update information and the configuration information.
22. The computer program product of claim 19, wherein the method further comprises sending updated configuration information from the observer to the aspect.

23. A method of maintaining data consistency between a subject object on a first computer system and an observer object on a second computer system, comprising:
- a) generating an aspect object;
 - b) communicating configuration information from the observer object to the aspect object, the configuration information including a desired type indicator and a desired communication rate indicator;
 - c) attaching the aspect object to the subject object; and
 - d) in response to a state change indication from the subject:
 - 1) sending an update to the aspect;
 - 2) interrogating the update to generate an update type indicator;
 - 3) modifying the update based on a comparison between the update type indicator and the desired type indicator to produce a modified update;
 - 4) sending the modified update to an accumulator;
 - 5) using the desired communication rate indicator to determine whether the object is ready to receive the modified update; and
 - 6) communicating the modified update to the observer.

9. Evidence appendix

Applicant believes no additional evidence is required.

10. Related proceedings appendix

There are no related proceedings.

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For each of the foregoing reasons, Applicant submits that the Examiner's rejections of claims 1-23 were erroneous, and respectfully requests reversal of these decisions.

Date: December 2, 2005

Respectfully submitted,

CERTIFICATE OF MAILING
UNDER 37 C.F.R. 1.8(a)

I hereby certify that the enclosed or attached correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on December 2, 2005.


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